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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/001,483	11/01/2001	Antonio L. P. Rotondaro	TI-31133	1903

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EXAMINER

ESTRADA, MICHELLE

ART UNIT PAPER NUMBER

2823

DATE MAILED: 01/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/001,483	ROTONDARO, ANTONIO L. P.	
	Examiner	Art Unit	
	Michelle Estrada	2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10 and 11 is/are allowed.
- 6) ☒ Claim(s) 1,2,4-7 and 9 is/are rejected.
- 7) ☒ Claim(s) 3 and 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicant's arguments, filed 10/20/03, with respect to the rejection(s) of claim(s) 1, 4 and 7 under Ping et al. have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Nambu et al. (6,475,815).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ping et al. (6,083,849) and Nambu et al. (6,475,815).

Ping et al. discloses providing a silicon substrate (12) with an upper surface; forming an amorphous region (20) in said upper surface (Col. 3, lines 20-35); exposing the amorphous region to a halogen species wherein the halogen species is fluorine; and forming a dielectric layer (32) on said amorphous region, wherein the dielectric is one of silicon nitride and silicon oxide (Col. 4, lines 58-60).

Ping et al. do not disclose forming the amorphous region in said upper surface by exposing said upper surface to halogen species.

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Nambu et al. disclose forming an amorphous region in a semiconductor region of a substrate by exposing the region to ions of a halogen element (e.g. by implantation) (Col. 3, lines 6-9).

It would have been within the scope of one of ordinary skill in the art to combine the teachings of Ping et al. and Nambu et al. to enable the formation of the amorphous region of Ping et al. to be performed according to the teachings of Nambu et al. because one of ordinary skill in the art would have been motivated to look to look to alternative suitable methods of performing the disclosed formation of the amorphous region of Ping et al. and art recognized suitability for an intended purpose has been recognized to be motivation to combine. See MPEP 2144.07.

Claims 5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ping et al., Nambu et al. and Ohtani et al. (6,348,367).

The combination of Ping et al. and Nambu et al. does not disclose forming a capping layer on said amorphous region; and forming a dielectric layer on said capping layer.

Ohtani et al. disclose providing a silicon substrate 201 with an upper surface; forming an amorphous region (203); forming a dielectric layer of silicon oxide (209) on said amorphous region; and forming a dielectric layer (214) on said silicon oxide (209).

It would have been within the scope of one of ordinary skill in the art to combine the teachings of Ping et al., Nambu et al. and Ohtani et al. to enable formation of a capping layer and dielectric layer over the amorphous region for the reasons disclosed by Ohtani et al.

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Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ping et al., Nambu et al. and Ohtani et al. as applied to claims 1, 4, 5, 7 and 9 above, and further in view of Ishihara et al. (6,240,610).

The combination of Ping et al., Nambu et al. and Ohtani et al. does not disclose further removing a thin dielectric layer from said upper surface prior to forming said amorphous region.

Ishihara et al. discloses removing a native oxide formed on the substrate surface prior to subsequent processing.

It would have been within the scope of one of ordinary skill in the art to combine the teachings of Ping et al., Nambu et al., Ohtani et al. and Ishihara et al. to enable formation of the amorphous layer and further the removal of the dielectric layer provides a cleaning step to ensure quality.

Allowable Subject Matter

Claims 10 and 11 allowed.


Claims 3 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Estrada whose telephone number is (703) 308-0729. The examiner can normally be reached on Monday through Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


George Fourson
Primary Examiner
Art Unit 2823


MEstrada
January 12, 2004